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Conference Abstract

Components of a Digital Specimen Architecture for Biological Collections

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Abstract

In 2020, we began developing software components for an Application Programming Interface (API)-based integration architecture (the “Specify Network”) to leverage the global footprint of the Specify 7 collections management platform (www.specifysoftware.org) and the analytical services of the Lifemapper (lifemapper.org) and Biotaphy (biotaphy.org) Projects. The University of Kansas Lifemapper Project is a community gateway for species distribution and macroecological modeling. The Biotaphy Project, an extension of Lifemapper, is the product of a six-year, U.S. National Science Foundation-funded collaboration among researchers at the Universities of Michigan, Florida, and Kansas. Biotaphy's primary scope is to use big data methods and high-performance computing to integrate species occurrence data with phylogenetic and biogeographic data sets for large taxonomic and spatial scale analyses. Our initial integrations between Biotaphy and the Specify Network enable Specify users to easily discover remote information related to the specimens in their collection.

The widely-discussed, digital specimen architecture being championed by DiSSCo (Distributed System of Scientific Collections www.dissco.eu) and others (https://bit.ly/3jfsAgz) will change data communications between biodiversity collections and the broader biodiversity data community. Those network interactions will evolve from being predominantly one-way, batch-oriented transfers of information from museums to aggregators, to an n-way communications topology that will make specimen record discovery, updates and usage much easier to accomplish. But museum specimens and

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their catalogs will no longer be an intellectual endpoint of species documentation. Rather, records in collections management systems will increasingly serve as a point of departure for data synthesis, which takes place outside of institutional data domains, and which will overlay the legacy role of museums as authoritative sources of information about the diversity and distribution of life on Earth. Biological museum institutions will continue to play a vital role as the foundation of a global data infrastructure connecting aggregators, collaborative databases, analysis engines, journal publishers, and data set archives.

In this presentation, we will provide an update on the components and capabilities that make up integrations in the Specify Network as an exemplar of the global architecture envisaged by the biodiversity research community.

Keywords

APIs, Specify, collections management systems, GUIDs, Broker, Resolver, Biotaphy, Lifemapper, DiSSCo

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